Checklist for Fertilizing Sugar Beet.

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It is late July and it has come time to start planning on nutrient management of the sugar beet crop for 2018. Below is a check list to review when you thinking about nutrient management of next year's crop.

1. Get a soil test. The soil test should be used in field selection for sugar beet production and also for planning the amount of nutrients needed for optimum production in 2018.

   For organic matter (OM), pH, phosphorus (P), and potassium (K) a soil sample taken to a depth of 6 inches is needed.

   For soil nitrate-N, a soil sample taken to a depth of 42 to 48 inches is needed.

2. The soil samples should be taken based on the zones defined by the Organic matter soil mapper program provided by SMBSC. This software will define the management zones in a field that should be sampled as a group.

3. The soil nitrate-N test is important for selection of the field to grow high quality sugar beets. If the soil test is greater than 150 lb N/A then seriously consider a different field for sugar beet production. The nitrogen nutrient recommendation is a total of soil test nitrate-N to 42 to 48 inches + fertilizer N should equal 100 to 110 lb N/A. Values greater than these will cause a reduction in sugar quality and thus a reduction in sugar yield. Delivery of lower quality beets to the refinery will reduce the efficiency of extraction of sucrose. The added cost from a reduced efficiency will cause less return to the Cooperative owned by the growers. A soil sample for nitrate-N can be taken either in the fall or spring. For the fall soil sample, the later in the season the sample is taken (the closer to the time soil temperatures reach 50 degrees) the better the predictability of the soil test on N needs for the crop. Soil samples taken in August and September are worthless for predicting N needs! Nitrogen can be applied on heavy textured non-irrigated soils either in the fall after the soil temperature have gotten below 50 degrees or in the spring pre-plant. There is little need to side dress N on non-irrigated heavy textured soils. Nitrogen application for sugar beet grown on irrigated sandy soils is different; a split application should be done, half just prior to planting and half around the 6 to 8 leaf stage. This will reduce the potential loss of N to leaching and help maximize the amount available to the crop.

4. Phosphorus fertilizer application should be based on the Olsen soil test if your pH is greater than 7.4 and the Bray P 1 soil test if the pH is less than 7.4. If you have a very low or low soil test P, consider the use of 3 gallons of 10-34-0 per acre with the seed at planting. Research conducted in Northwest Minnesota indicates the use of 3 gallons with the seed will produce the same yield response as 45 to 60 pounds of phosphate/A broadcasted across the field. If needed, phosphorus can provide a tonnage increase and does not influence sugar beet quality.

5. Potassium is the third major nutrient to consider for a nutrient program. If the soil test is greater than 120 ppm, there is no need to apply K for production. Potassium is considered an impurity in the sucrose extraction procedure. In the past, there has been concern that the addition of K fertilizer would reduce quality. Recent research conducted in the SMBSC and Imperial Valley growing areas showed that excess K has not caused quality problems. The only concern about K is the lack of return for the expense of the product.

6. There has been little evidence that other nutrients are needed for sugar beet production. If you are growing sugar beets on irrigated sandy soil, boron may be needed. Apply boron with great care. Too much boron is known to reduce germination of sugar beet and thus reduce stands. The recommended rate would be 2 lb B/A in a broadcast application. Seed application of boron is not recommended. There is no need for boron on heavy textured soils.

7. A word about N sources that are not fertilizer; particularly manure and alfalfa. If you have a manure application or a previous crop of alfalfa history, follow the above soil testing and guidelines. Do not over apply manure in amount or in frequency in the rotation. Manure will provide a large amount of N through mineralization along with many of the other nutrients needed by sugar beet. With alfalfa, sugar beet should not be grown the first two years after alfalfa is broken out.

8. Finally, plan your nutrient program looking forward more than a year in advance. Do not over fertilize other crops in rotation with sugar beet. This can and will come back to kill your quality in future sugar beet crops!